

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/695,317

REMARKS

Claims 1-14 are pending in the present application. As will be discussed below, Claim 1 has been amended. No new matter has been added. Accordingly, entry of the present amendment is requested.

Referring to page 2 of the Office Action, Claim 1 has been objected to as "expressing alternative limitations." It is indicated that Claim 1 should be written in proper Markush format.

In response, Applicants have amended Claim 1 to recite "a rubber component selected from the group consisting of ...". Accordingly, withdrawal of this objection is requested.

Referring to pages 3 and 4 of the Office Action, Claims 1-14 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,380,288 to Hojo et al.

Hojo is relied upon to disclose a rubber composition prepared by compounding 0.05 to 20 parts by weight of a hydrazide compound and rubber selected from the group consisting of natural rubber and synthetic rubber. The Abstract of Hojo, column 2, line 15 through column 5, line 48 and column 17, lines 14-45, are referred to in support of these assertions.

Hojo is further relied upon to teach that the rubber compositions are useful as tire treads. Column 4 of Hojo, lines 60-67, are referred to in support of this assertion.

It is indicated that "Hojo specifically teaches the use of 3-hydroxy-N'-(1,3-dimethylbutylidene)-2-naphthohydrazide in the rubber composition." It is further noted that Hojo teaches the use of HAF grade carbon black and reinforcing filler. Table 1 of Hojo is referred to in this regard.

It is acknowledged that Hojo does not disclose all the properties in the carbon black recited in the instant claimed invention. However, it is asserted that "the present specification

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explicitly states that 'carbon blacks of HAF grade to SAF grade that satisfy the various conditions described above can be preferably used in the present invention.'" In view of this, the Examiner concludes that "the property ranges of . . . carbon black used in the present invention are inherent in the HAF grade carbon black disclosed in Hojo [and] Hojo anticipates claims 1-14."

Applicants respectfully traverse this rejection for the following reasons.

Hojo discloses a rubber composition prepared by compounding 0.05 to 20 parts by weight of a hydrazide compound and a rubber component selected from the group consisting of natural rubber and synthetic rubber. The rubber composition may comprise a carbon black as the reinforcing filler. In Hojo, the carbon black has the characteristics of a specific surface area by nitrogen adsorption (N₂SA) of 30 - 180 m²/g and a dibutyl phthalate absorption (DBP) of 69 - 200 ml/100 g. *See*, col. 17, lines 55-58. More specifically, the carbon black in Hojo is HAF grade as indicated in Table 1. *See*, col. 24.

In contrast, the present claimed invention is directed to a rubber composition comprising a rubber component and a carbon black that has the following characteristics: (i) DBP: 140-200 ml/100 g; (ii) Dw/Dn: 1.80-2.40; and (iii) an equation of Tint $\geq 0.100 \times N_2SA + 93$.

Hojo is silent with respect to the ratio of Dw/Dn and the equation of Tint $\geq 0.100 \times N_2SA + 93$. Accordingly, Applicants respectfully submit that the present claimed invention is not anticipated by Hojo.

In view of the foregoing, withdrawal of the rejection based upon Hojo is requested.

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Referring to pages 5 and 6 of the Office Action, Claims 1-14 have also been rejected as being unpatentable over JP 09-111839 to Suzuki *et al.* in view of EP 0 478 274 A1 to Etoh *et al.*

Suzuki is relied upon to disclose carbon black for tire treads. It is noted that in the working examples, Suzuki discloses the use of carbon black having the properties identified near the bottom of page 5 and the top of page 6 of the Office Action. It is acknowledged, however, that Suzuki differs from the present claimed invention in that Suzuki does not disclose the use of hydrazides.

Etoh is relied upon to disclose a rubber composition with reinforcement filler and the use of hydrazide in tire treads.

It is concluded that “in view of Etoh, one having ordinary skill in the art would be motivated to modify Suzuki by using a hydrazide in the rubber composition.” It is asserted that “such modification would be obvious because one would expect that the use of [a] rubber composition as taught by Suzuki would be similarly useful and applicable to the rubber composition taught in Etoh.” It is further noted that “the references Etoh and Suzuki are both dedicated to the same goal: develop rubber compositions for tire treads, which provide low fuel consumption and improved wear resistance.

Applicants also respectfully traverse this rejection.

Suzuki discloses a carbon black having the properties: (a) N₂SA: 146-204 m²/g; (b) IA: 140-212 mg/g; (c) CTAB: 122-162 mg/g; (d) N₂SA/IA: 0.886-1.032 m²/g; (e) DBP: 107-163 ml/100 g; and (f) ΔD₅₀/D_{st}: 0.793-1.1133. However, Suzuki is silent with respect to the ratio of Dw/Dn and the equation of Tint ≥ 0.100 x N₂SA + 93. Further, as acknowledged in the Office

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Action, Suzuki neither teaches nor suggests use of a hydrazide compound in a rubber composition.

Etoh discloses a rubber composition including carbon black and a hydrazide compound. However, there is no mention to the specific properties of the carbon black in Etoh.

In contrast, in the present claimed invention, the carbon black in the rubber composition satisfies the following parameters: (i) DBP: 140-200 ml/100g; (ii) Dw/Dn: 1.80-2.40; and (iii) $T_{int} \geq 0.100 \times N_2SA + 93$. As discussed on page 6 of the specification of the present application, if the ratio of Dw/Dn is within the specified range, then the heat-buildup property can be maintained and the wear resistance is good; and if the equation of $T_{int} \geq 0.100 N_2SA + 93$ is met, then wear resistance is good.

Neither Suzuki nor Etoh teach or suggest the presently claimed ratio of Dw/Dn and the equation relating Tint. Accordingly, Applicants respectfully submit that the presently claimed invention is not obvious from the teachings of Suzuki and Etoh.

In view of the foregoing, withdrawal of the rejection based upon Suzuki in view of Etoh is requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE
IN THE CLAIMS:

Claim 1 is amended as follows:

1. (Amended) A rubber composition comprising:

a rubber component selected from the group consisting of at least one of natural rubber and a diene-based synthetic rubber; and

a carbon black,

wherein said carbon black has a dibutyl phthalate adsorption amount (DBP) of 140 to 200 ml/100 g, an aggregate of said carbon black has a ratio (Dw/Dn) of a weight average diameter (Dw) to a number average diameter (Dn) of 1.80 to 2.40, and said carbon black has a specific tinting strength (Tint) and a nitrogen adsorption specific surface area (N₂SA) satisfying an inequality: Tint \geq 0.100 x nitrogen adsorption specific surface area (N₂SA) + 93.